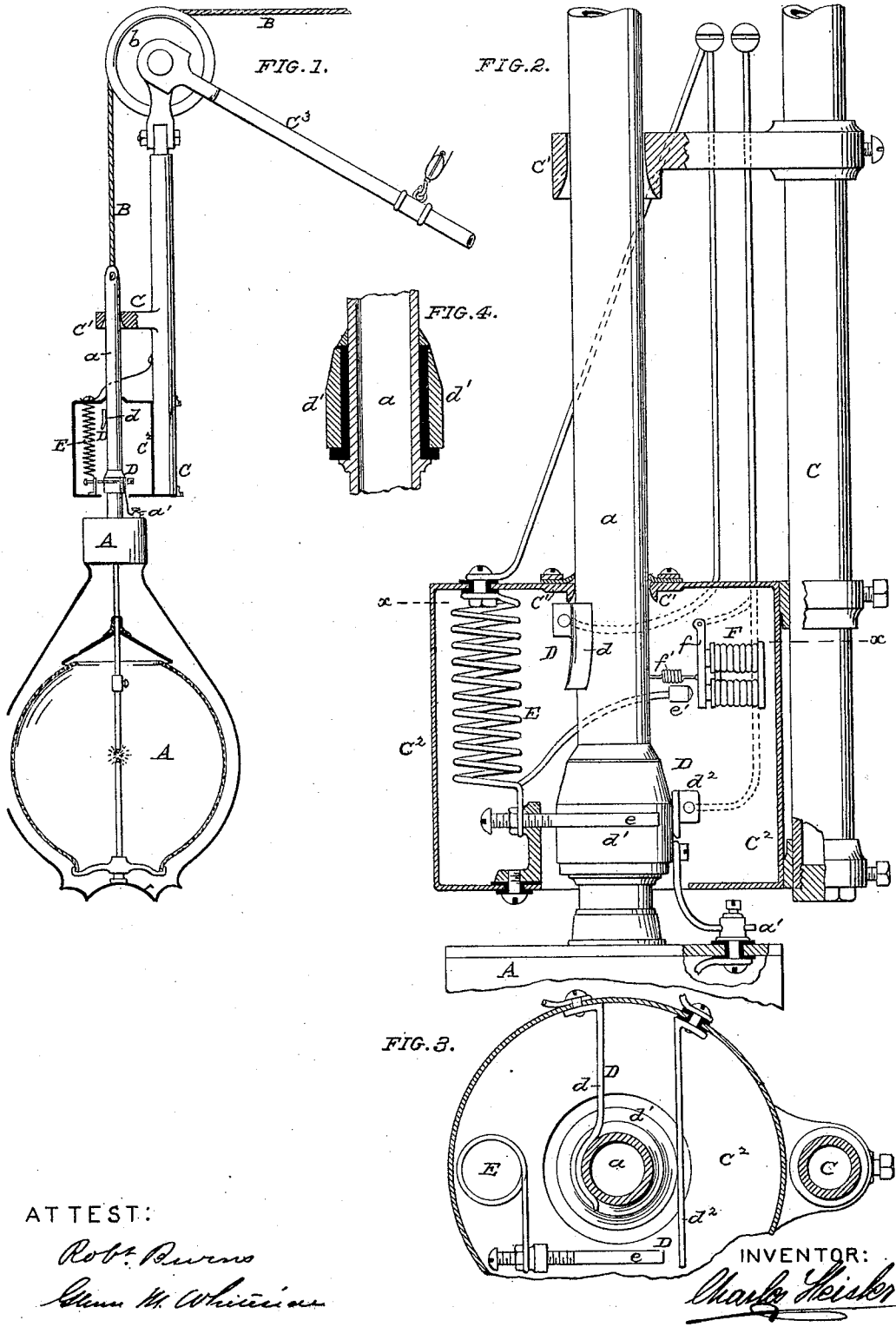


C. HEISLER.

ELECTRIC LIGHT SUPPORT.

No. 251,116.

Patented Dec. 20, 1881.



ATTEST:

Robt. Burns
Sam M. Whitman

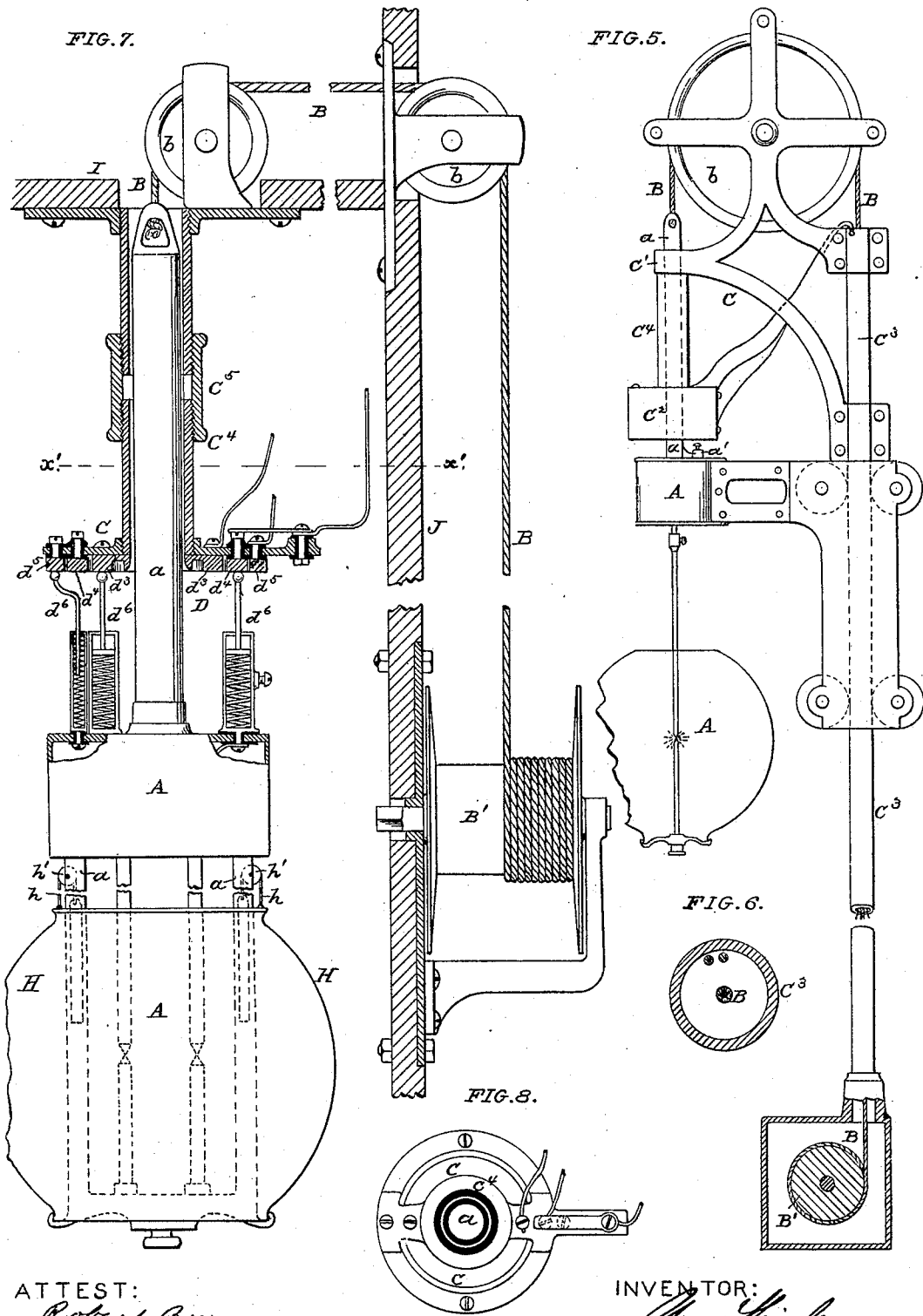
INVENTOR:

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UNITED STATES PATENT OFFICE.

CHARLES HEISLER, OF ST. LOUIS, MISSOURI.

ELECTRIC-LIGHT SUPPORT.

SPECIFICATION forming part of Letters Patent No. 251,116, dated December 20, 1881.

Application filed November 1, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HEISLER, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a certain new and useful Improved Electric-Light Support; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The present invention relates to a method of automatically lighting electric lamps (having one or more sets of carbon electrodes) when the same are raised to their proper position and extinguishing the same when they are lowered from said position, and also to a method for preventing any change in the normal resistance of the main line by the extinguishing of any one or more lights in said main line; and my invention consists—

First, in the provision, in an electric lighting system, of a suitable automatic switch, operated by the raising of the lamp to establish connection for the passage of the electrical current and the formation of the voltaic arc between the carbons of the lamp, said switch being operated by the lowering of the lamp to break connection and extinguish the lamp.

Second, in the provision, in an electric lighting system where two or more lamps are inserted in one line, of an automatic switch and shunt, so arranged that when a lamp is lowered said switch will be automatically operated to switch the current into the shunt, which is of equal resistance to the voltaic arc, so that the withdrawal of one or more lamps from the line will not change the normal resistance of the main line. The shunt and switch are attached to the stationary guide-frame of the lamp, and each lamp is provided with its separate switch and shunt.

Third, in an electric lighting system, the provision, in connection with the automatic switch and shunt, as above set forth, of an electromagnet placed in the circuit, which acts to automatically shunt the current when, from any cause, the voltaic arc of the lamp becomes broken.

In the annexed drawings, in which similar letters of reference indicate like parts in all the figures, Figure 1 is a side-view, partly in section, illustrating my invention as arranged for use on a boom-derrick. Fig. 2 is a detail vertical section of the automatic switch, shunt, &c. Fig. 3 is a horizontal section of the same at line *x x*. Fig. 4 is a detail section of the contact-ring, &c., of the automatic switch. Fig. 5 is a side view, partly in section, illustrating my invention as applied to a mast or pole. Fig. 6 is a detail horizontal section of the pole or mast. Fig. 7 is a vertical section, illustrating my invention as arranged for use in rooms, &c., and also the mode of using two or more sets of carbons in each lamp. Fig. 8 is a horizontal section of the same at line *x' x'*.

As shown in the drawings, A represents an electric lamp of any suitable form and construction, which is attached to a cord, B, passing over pulley or pulleys *b* to a winding-drum, B'. The lamp, when in its "up" position, engages in the guide frame or bracket C, and the arrangement and construction of parts will be modified to suit the location and use to which the lamp is applied.

Fig. 1 illustrates an electric lamp applied to a boom-derrick, for use on steamboats, docks, &c.; Fig. 5 as applied to a vertical pole or mast, for use on ships, outdoor illumination, &c., and Fig. 7 as applied for use in rooms, halls, &c.

To the guide frame or bracket C is attached the fixed part of the automatic switch D, used for making and breaking electrical connection with the electric lamp. This switch may be of any suitable form or construction, either mechanical or electrical, that will act when the lamp is raised to its proper position to close contact and form the voltaic arc between the carbons of the lamp, and when the lamp is lowered will break contact and extinguish the lamp.

In an electric lighting system where more than one lamp is used in the same circuit, a shunt, E, will be arranged, in connection with the switch D, so that when a lamp is withdrawn from the circuit the switch D will be automatically operated to insert the shunt E in the circuit in place of the voltaic arc of the

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lamp withdrawn, and thus prevent any change in the normal resistance of the main line by such withdrawal of one or more lamps.

In Fig. 2 is illustrated my preferred manner of carrying out my system: The electric lamp A is provided with an upwardly-projecting guide-stem, *a*, to which the lifting-cord B is attached, and by means of which the lamp is guided and held in position in guides C' on the bracket-frame C, as shown. The guide-stem *a*, when the lamp is in its up position, is in metallic contact with the contact-plate *d*, connected to the pole of the main line, that connects with the upper-carbon electrode of the lamp.

d' is a switch or contact ring on the guide-stem *a*, properly insulated, as shown, from the metal portion of the stem *a*, but in metallic contact with the insulated screw *a'*, that is connected to the lower-carbon electrode of the lamp.

*d*² is a spring contact-plate connected to the opposite pole of the main line, and which, when the lamp is in its up position, is in contact with the switch-ring *d'* and the lower-carbon electrode of the lamp. The contact-plates *d* *d*² form the fixed parts of the automatic switch, while the lamp-stem *a*, with its insulated ring *d'*, forms the movable part of the same.

E is a shunt, properly insulated from the casing C², and having a contact-point, *e*, with which the spring contact-plate *d*² comes in contact to automatically shunt the electric current when the lamp is lowered.

In order to automatically shunt the current when the lamp becomes extinguished from any cause, I have arranged an electro-magnet, F, attached to the guide-frame and placed in the circuit. The armature *f* of this electro-magnet has branch connection with the main line, and is attracted by the electro-magnet when the lamp is burning, and when the lamp is extinguished is released and drawn by spring *f'* into connection with the contact-point *e'* of the shunt E, as clearly shown in Fig. 2.

In an electric lighting system where each light has its separate wire and a principal wire used as a return-wire, the use of a shunt and a shunt and electro-magnet, as above described, may be dispensed with.

In Fig. 7 I have illustrated this system with a lamp employing two sets of carbons. As shown, the guide-frame C is provided with three circular contact-rings, *d*³ *d*⁴ *d*⁵, the two outer ones, *d*⁴ *d*⁵, of which are insulated from the supporting-frame, while the inner one, *d*³, is in metallic contact therewith. The inner contact-plate, *d*³, has connection with the main-line return-wire, and the two outer plates, *d*⁴ *d*⁵, are connected with a suitable switch at the generator, so that either plate can be put in connection with the same, and so that when one set of carbons is consumed the other set can be switched in either automatically or by hand, so as to continue the light. The contact between the plates *d*³ *d*⁴ *d*⁵ and the lamp, &c.,

is made by the flexible or spring contact-points *d*⁶, as clearly indicated in Fig. 7.

By making the contact-plates *d*⁴ *d*⁵ circular, as shown and described, a perfect contact is obtained with the point *d*⁶, regardless of what position the lamp may arrive at when raised, as it is impossible to prevent a turning motion of the lamp when suspended by a cord or rope.

The contact-points *d*⁶ are formed so as to have considerable of a spring movement, in order to make a close contact with plates *d*³ *d*⁴ *d*⁵ and allow for any stretching of the lifting-cord B of the lamp.

The glass globe H, used to inclose the light, is made removable in the following manner: *h* *h* are cords or chains connected to the top of the globe and passing over pulleys *h'*, to be connected to counterpoise-weights *h*², preferably arranged to move within the tubular supports *a*² of the lower-carbon holder.

In order to adjust the heights of the posts C³, tubular extensions C⁴, &c., so that the same can be lengthened and adjusted by the insertion of a piece of tube, I have arranged the same in sections, which are secured together by couplings C⁵, and the necessary conducting-wires can be, when desired, carried through the inside of said tubes.

The advantages derived from my improved electric lighting system are: first, it is automatic in its action, merely requiring to be raised or lowered in order to light or extinguish the lamp; second, it facilitates the cleaning of the globe and lamp and the setting of the carbons in a perpendicular line in the lamps, as the lamps can be lowered down into easy reach from the floor or ground in performing this work; third, it is well known to the art that a high tension, as well as alternated currents, are very dangerous to the operator who handles the lamps while in operation, which danger is altogether avoided in my system, owing to the fact that the lamp is entirely out of the circuit when lowered, which is owing to the fact that the shunt, &c., are arranged on the guide-frame of the lamp, and have no connection with the lamp when lowered; fourth, my improved system allows of the lifting-cords, pulleys, conducting-wires, &c., being arranged out of sight above the ceiling I and behind the plastering J, as clearly indicated in Fig. 7; fifth, it prevents all the lamps from being extinguished when any one lamp burns out or becomes accidentally extinguished, and which allows of said lamp being withdrawn from the circuit and replenished and adjusted without affecting any of the other lamps in the line; sixth, by the use of the spring contact-points *d*⁶ a close contact is kept up, and not affected by any stretching of the lifting-cord of the lamp.

I am aware that prior to my invention lamps have been raised and lowered by cords and pulleys, also by means of a flexible conductor, leaving the lamp or some portion thereof at all times in the circuit. I am also aware that

automatic shunts have been provided as a fixture in electric lamps when two or more of such lamps have been used in a circuit. I therefore do not claim such construction or arrangement, broadly; but

5 What I do claim as new and novel, and desire to secure by Letters Patent, is—

1. The combination, with a stationary support or post, c^3 , of an electric lamp which is adapted to be raised and lowered by a rope, of a set of contact-points arranged on the lamp, which are automatically brought into and out of contact by the raising and lowering of the lamp with the stationary contact-plates connected to the generator, substantially as herein described, and for the purpose set forth.

2. The combination, with an electric lamp which is adapted to be raised and lowered by a rope, of one or more guides and a set of contact-points arranged on the lamp, and which are automatically brought into and out of contact by the raising and lowering of the lamp with stationary contact-plates connected to the generator, substantially as herein described, and for the purpose set forth.

3. In an electric-lighting system having two or more lamps in the circuit, the combination

of a stationary support or guide provided with a shunt, and a switch, D, consisting of a ring, d , contact-ring d' , and spring contact plate d^2 , with the lamps arranged to be raised and lowered into and out of contact by a rope, substantially as and for the purpose set forth.

4. In an electric-lighting system having two or more lamps in the circuit, the combination of a stationary support or guide provided with a shunt, a switch, D, consisting of a ring, d , contact-ring d' , and spring contact-plate d^2 , and an electro-magnet operated automatically, as described, with the lamps arranged to be raised and lowered into and out of contact by a rope, substantially as and for the purpose set forth.

5. The combination, with an electric lamp adapted to be raised and lowered into and out of contact, of the contact-points d , circular contact-plates d^3 d^4 d^5 , and flexible or spring contact-points d^6 , that are concentric with the axis of the lamp, as and for the purpose set forth.

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Witnesses:

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GLENN M. WHITESIDE.